

Claims:

- 1           1.       An electrical component package comprising a substantially flat base to  
2 accommodate one or more electrical components on its surface and one or more coaxial vias  
3 formed in the base for input/output of electrical signals from the electrical component.
- 1           2.       The package of Claim 1, wherein each coaxial via further comprises a central  
2 conductive contact area surrounded by an insulating material ring such that the central  
3 conductive contact area, the insulating material ring around the central conductive contact area  
4 and the base form a coaxial via connection.
- 1           3.       The package of Claim 2, further comprising one or more coaxial wires connecting  
2 sites on said component to the one or more coaxial vias.
- 1           4.       The package of Claim 3, wherein each coaxial wire further comprises a  
2 conductive bonding wire, a conformal coating of insulating material that surrounds the  
3 conductive bonding wire and a conductive layer that coats the coating of insulating material to  
4 form a coaxial structure.
- 1           5.       The package of Claim 4, wherein the one or more coaxial wires further comprise a  
2 tapered transition at the end of the coaxial wire connected to the coaxial via to enhance the  
3 coaxial characteristics of the coaxial wire.
- 1           6.       The package of Claim 5, wherein the tapered transition further comprises an  
2 accumulation of conductive material where the coaxial wire connects to the coaxial via.
- 1           7.       The package of Claim 6, wherein the tapered transition further comprises a thicker  
2 coating of insulating material adjacent the tapered transition.
- 1           8.       The package of claim 1, wherein the base further comprises electrically  
2 conductive material.
- 1           9.       The package of claim 1, wherein the base further comprises a thermally  
2 conductive material.
- 1           10.      The package of claim 1, wherein the base further comprises a material that is  
2 thermally matched with the one or more electrical components to be mounted on the base.

1 11. The package of claim 1, wherein the coaxial vias include a solder mask.

1 12. The package of claim 11, wherein the solder mask extend to the package edge.

1 13. A structure comprising an electrical device having at least one conductive pad, a  
2 base material to which the electrical device is mounted wherein the base has at least one coaxial  
3 via, and a micro-coaxial wire connecting said pad to a conductor in said coaxial via to provide a  
4 coaxial signal path from the electrical device to the coaxial via.

1 14. The structure of Claim 13, wherein each coaxial via further comprises a central  
2 conductive contact area surrounded by an insulating material ring such that the central  
3 conductive contact area, the insulating material ring around the central conductive contact area  
4 and the base form a coaxial via connection.

1 15. The structure of Claim 13, wherein each micro-coaxial wire further comprises a  
2 conductive bonding wire and a conformal coating of insulating material that surrounds the  
3 conductive bonding wire to form a coaxial structure.

1 16. The structure of Claim 15, wherein the micro-coaxial wires further comprise a  
2 tapered transition at the end of the coaxial wire connected to the coaxial via to enhance the  
3 coaxial characteristics of the micro-coaxial wire.

1 17. The structure of Claim 16, wherein the tapered transition further comprises an  
2 accumulation of conductive material where the coaxial wire connects to the coaxial via.

1 18. The structure of Claim 17, wherein the tapered transition further comprises a  
2 thicker coating of insulating material adjacent the tapered transition.

1 19. The structure of claim 13, wherein the base further comprises electrically  
2 conductive material.

1 20. The structure of claim 13, wherein the base further comprises a thermally  
2 conductive material.

1 21. The structure of claim 13, wherein the base further comprises a material that is  
2 thermally matched with the one or more electrical components to be mounted on the base.

1           22.    The structure of Claim 13 further comprising a conductive coating applied to the  
2 outside of the insulating material wherein said conductive coating is electrically attached to the  
3 shield side of said coaxial via.

1           23.    A method of fabricating coaxial electrical interconnections between a component  
2 and a coaxial via, comprising:

3                placing a wire between said component and a conductive portion of a coaxial via;  
4                conformally coating the wire and component with dielectric material; and  
5                conformally coating the dielectric material with a conductive material to form coaxial  
6 wires between the component and the coaxial via.

1           24.    The method of Claim 23 further comprises selectively removing portions of said  
2 dielectric material prior to the conductive material conformal coating.

1           25.    A method of fabricating a base structure with coaxial vias, comprising:  
2                selectively etching an insulating material attached to a flat surface; and  
3                plating said etched insulating material with a conductive material to form a center  
4 conductor for a coaxial via structure.

1           26.    The method of claim 25, wherein the insulating material comprises SU-8.

1           27.    The method of claim 26 further comprising glazing said insulating material layer.

1           28.    The method of claim 25 further comprising applying an adhesive layer to secure  
2 the insulating material to the flat surface.

1           29.    The method of claim 28, wherein applying the adhesive layer further comprises  
2 plating the adhesive layer with gold..

1           30.    The method of claim 28, wherein applying the adhesive layer further comprises  
2 plating the adhesive layer with gold and then nickel.

1           31.    A high frequency component package, comprising:

2 a substantially flat base to accommodate one or more electrical components on its  
3 surface;

4 one or more via holes formed in the base to permit signals from the electrical components  
5 to pass through the base; and

6 wherein each via hole further comprises a central conductive contact area surrounded by  
7 an insulating material ring such that the central conductive contact area, the insulating material  
8 ring around the central conductive contact area and the base form a coaxial via connection.

1 32. A packaged high frequency device, comprising:

2 a substantially flat base having a high frequency device bonded on its surface, the high  
3 frequency device having a plurality of bonding pads;

4 one or more via holes formed in the base to permit signals from the electrical components  
5 to pass through the base, wherein each via hole further comprises a central conductive contact  
6 area surrounded by an insulating material ring such that the central conductive contact area, the  
7 insulating material ring around the central conductive contact area and the base form a coaxial  
8 via connection; and

9 one or more coaxial bonding wires that connect the bonding pads of the high frequency  
10 device to the one or more coaxial via holes in the base wherein each coaxial bonding wire further  
11 comprises a conductive bonding wire and a conformal coating of insulating material that  
12 surrounds the conductive bonding wire so that the signals are carried by a coaxial structure from  
13 the device out through the base.